

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently Amended) A thiolated mucoadhesive polymer comprising not more than 10 different monomers and at least one non-terminal thiol group, said polymer exhibiting a total work of adhesion (TWA) of more than 120 μ J to intestinal mucosa at a pH of 7, and said polymer being selected from the group consisting of: a thiolated copolymer of acrylic acid and divinyl glycol, a thiolated polymer of chitosan, a thiolated polymer of sodium carboxymethylcellulose, a thiolated polymer of sodium alginate, a thiolated polymer of sodium hydroxypropylcellulose, a thiolated polymer of hyaluronic acid, and a thiolated polymer of pectin, and derivatives of said thiolated polymers wherein:

(a) said thiolated mucoadhesive polymer comprises at least one non-terminal thiol group, and

(b) said thiolated mucoadhesive polymer exhibits a total work of adhesion (TWA) of more than 120 μ J to intestinal mucosa at a pH of 7.

Claims 2-27 (Canceled).

Claim 28 (Currently Amended) A The thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer comprising comprises at least 0.05 μ mol of covalently bound thiol groups per gram of polymer.

Claim 29 (Currently Amended) The thiolated mucoadhesive~~A~~ polymer as set forth in ~~claim 1~~claim 28, wherein said thiolated mucoadhesive polymer ~~comprising~~comprises at least 0.1 μmol of covalently bound thiol groups per gram of polymer.

Claim 30 (Canceled).

Claim 31 (Currently Amended) The thiolated mucoadhesive~~A~~ polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer comprises at least one cysteine group.

Claim 32 (Currently Amended) The thiolated mucoadhesive~~A~~ polymer as set forth in claim 31, wherein said at least one cysteine group is bound to ~~said the~~ polymer via an amide bond.

Claim 33 (Currently Amended) The thiolated mucoadhesive~~A~~ polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer includes at least one monomer having free thiol groups within said thiolated mucoadhesive polymer.

Claim 34 (Canceled).

Claim 35 (Currently Amended) The thiolated mucoadhesive~~A~~ polymer as set forth in claim 1, wherein said polymer ~~exhibiting~~exhibits a total work of adhesion (TWA) of more than 150 μJ to intestinal mucosa at a pH of 7.

Claim 36 (Currently Amended) The thiolated mucoadhesive A polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer exhibiting ~~exhibits~~ a total work of adhesion (TWA) increased by at least 30% relative to a mucoadhesive polymer not containing at least one non-terminal thiol group, measured at a pH optimum of the total work of adhesion (TWA) of the thiolated mucoadhesive polymer.

Claim 37 (Currently Amended) The thiolated mucoadhesive A polymer as set forth in ~~claim 1~~ claim 36, wherein said thiolated mucoadhesive polymer exhibiting ~~exhibits~~ a total work of adhesion (TWA) increased by at least 50% relative to a mucoadhesive polymer not containing at least one non-terminal thiol group, measured at a pH optimum of the total work of adhesion (TWA) of the thiolated mucoadhesive polymer.

Claim 38 (Currently Amended) The thiolated mucoadhesive A polymer as set forth in ~~claim 1~~ claim 37, wherein said thiolated mucoadhesive polymer exhibiting ~~exhibits~~ a total work of adhesion (TWA) increased by at least 100% relative to a mucoadhesive polymer not containing at least one non-terminal thiol group, measured at a pH optimum of the total work of adhesion (TWA) of the thiolated mucoadhesive polymer.

Claim 39-55 (Canceled).

Claim 56 (Withdrawn – Currently Amended) A method of preparing a thiolated mucoadhesive polymer of claim 1, said method comprising:

providing base polymers comprising ~~assembled of not more than 10 different~~ monomers, ~~wherein at least one of the non-terminal monomers~~ monomer that includes a

terminal, functional group I, wherein said terminal, functional group I being is free within said polymer,

providing thiol-containing compounds, wherein said thiol-containing compounds including-include at least one further functional group II, and wherein said functional groups I and II are together capable of forming a covalent bond, and

reacting said base polymers with said thiol-containing groups, whereby said functional group I thereby formingforms a covalent bond with said functional group II to produce a thiolated mucoadhesive polymer of claim 1;

~~said polymer exhibiting a total work of adhesion (TWA) of more than 120 μ J to intestinal mucosa at a pH of 7, and~~

~~said polymer being selected from the group consisting of: a thiolated copolymer of acrylic acid and divinyl glycol, a thiolated polymer of chitosan, a thiolated polymer of sodium carboxymethylcellulose, a thiolated polymer of sodium alginate, a thiolated polymer of sodium hydroxypropylcellulose, a thiolated polymer of hyaluronic acid, a thiolated polymer of pectin, and derivatives of said thiolated polymers.~~

Claim 57 (Withdrawn - Currently Amended) A method as set forth in claim 56, further comprising adding coupling reagents when reacting said base polymers with said thiol-containing compounds.

Claim 58 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in ~~claim 57~~claim 56, wherein said functional group I is a carboxyl group and said functional group II is an amino group.

Claim 59 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in claim 58, wherein said amino group is a primary amino group.

Claim 60 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in claim 57, wherein said coupling reagents are carbodiimides, and amide bonds are formed.

Claim 61 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in claim 56, wherein said thiol-containing compound is a mercapto-compound comprising a primary amino group.

Claim 62 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in claim 61, wherein said thiol-containing compound is selected from the group consisting of cysteine and a cysteine derivative.

Claim 63 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in claim 56, wherein said reacting of said base polymers with said thiol-containing groups is performed at a pH of between 4 and 8.

Claim 64 (Withdrawn - Currently Amended) ~~A-~~The method as set forth in ~~claim~~
~~56~~claim 63, wherein said ~~reacting of said base polymers with said thiol-containing groups is~~
~~performed at a pH of~~is between 5.5 and 6.5.

Claim 65 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in claim 56, further comprising adjusting said ~~prepared~~ thiolated mucoadhesive polymer to a pH of between 5 and 9.

Claim 66 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in ~~claim 56~~ claim 65, further comprising adjusting said ~~prepared~~ polymer to a ~~wherein said pH of is~~ between 6.5 and 8.5.

Claim 67-91 (Canceled).

Claim 92 (Withdrawn – Currently Amended) A method of preparing a thiolated mucoadhesive polymer of claim 1, said method comprising:

providing base polymers ~~comprising assembled of not more than 10 different monomers, wherein~~ at least one ~~of the non-terminal monomers~~ monomer that includes a terminal, functional group I, wherein said terminal, functional group I being is free within said polymer and wherein said terminal, functional group I is a carboxyl group,

providing thiol-containing compounds, wherein said thiol-containing compounds including include at least one further functional group II, wherein said functional group II is an amino group, and

reacting said base polymers with said thiol-containing ~~groups~~ compounds, whereby said functional groups I ~~thereby forming form~~ a covalent bond with said functional groups II to produce and obtaining a thiolated mucoadhesive polymer of claim 1;

~~said polymer exhibiting a total work of adhesion (TWA) of more than 120 μJ to intestinal mucosa at a pH of 7, and~~

~~said polymer being selected from the group consisting of: a thiolated copolymer of acrylic acid and divinyl glycol, a thiolated polymer of chitosan, a thiolated polymer of sodium carboxymethylcellulose, a thiolated polymer of sodium alginate, a thiolated polymer of sodium hydroxypropylcellulose, a thiolated polymer of hyaluronic acid, a thiolated polymer of pectin, and derivatives of said thiolated polymers.~~

Claim 93 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in claim 92, further comprising adding at least one coupling reagent when reacting said base polymers with said thiol-containing compounds.

Claim 94 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in claim 92, wherein said amino group is a primary amino group.

Claim 95 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in claim 93, wherein said at least one coupling reagents-reagent is a carbodiimideare carbodiimides, and amide bonds are formed.

Claim 96 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in claim 92, wherein said thiol-containing ~~compound-compounds~~ are selected from the group consisting of ~~cysteine-cysteines~~ and a-cysteine ~~derivatives~~ derivative.

Claim 97 (Withdrawn - Currently Amended) ~~A-The~~ method as set forth in claim 92, wherein said base polymers are reacted with said thiol-containing ~~groups-compounds~~ at a pH of between 5.5 and 6.5.

Claim 98-109 (Canceled).

Claim 110 (Currently Amended) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer ~~being is~~ selected from the group consisting of: a thiolated copolymer of acrylic acid and divinyl glycol, a thiolated polymer of chitosan, a thiolated polymer of sodium carboxymethylcellulose, a thiolated polymer of sodium alginate, a thiolated polymer of sodium hydroxypropylcellulose, and a thiolated polymer of pectin, ~~and derivatives of said thiolated polymers.~~

Claim 111 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated copolymer of acrylic acid and divinyl glycol.

Claim 112 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated polymer of chitosan.

Claim 113 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated polymer of sodium carboxymethylcellulose.

Claim 114 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated polymer of sodium alginate.

Claim 115 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated polymer of sodium hydroxypropylcellulose.

Claim 116 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated polymer of hyaluronic acid.

Claim 117 (New) A thiolated mucoadhesive polymer as set forth in claim 1, wherein said thiolated mucoadhesive polymer is a thiolated polymer of pectin.